PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
PA0536.AP.WO		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US01/07447	08 March 2001 (08.03.2001)	08 March 2000 (08.03.2000)
International Patent Classification (IPC) or national classification and IPC		
IPC(7): G 06 F 19/00, 17/00 and US CL.: 463/16		
Applicant		
SHUFFLE MASTER, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

   I ☒ Basis of the report

   II ☐ Priority

   III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability

   IV ☐ Lack of unity of invention

   V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI ☐ Certain documents cited

   VII ☐ Certain defects in the international application

   VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
09 October 2001 (09.10.2001)	23 December 2004 (23.12.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Paul A. Bell Telephone No. (703) 305-3257

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

I. Basis of the report

1. With regard to the elements of the international application:*

- [ ] the international application as originally filed.
- [x] the description:
  pages 1 - 3, 5, 6, 8 - 10, 18, 19, 22, 23, 25 - 27 as originally filed
  pages 4, 7, 11 - 17, 20, 21, 24, , filed with the demand
  pages NONE , filed with the letter of .
- [x] the claims:
  pages 28 - 40 , as originally filed
  pages NONE , as amended (together with any statement) under Article 19
  pages NONE , filed with the demand
  pages NONE , filed with the letter of .
- [x] the drawings:
  pages 1 - 12 , as originally filed
  pages NONE , filed with the demand
  pages NONE , filed with the letter of .
- [ ] the sequence listing part of the description:
  pages NONE , as originally filed
  pages NONE , filed with the demand
  pages NONE , filed with the letter of .

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

- [ ] the language of a translation furnished for the purposes of international search (under Rule23.1(b)).
- [ ] the language of publication of the international application (under Rule 48.3(b)).
- [ ] the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- [ ] contained in the international application in printed form.
- [ ] filed together with the international application in computer readable form.
- [ ] furnished subsequently to this Authority in written form.
- [ ] furnished subsequently to this Authority in computer readable form.
- [ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- [ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

- [ ] the description, pages NONE
- [ ] the claims, Nos. NONE
- [ ] the drawings, sheets/figs NONE

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*
*** Any replacement sheet containing such amendments must be referred to under Item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 1 - 83	YES
	Claims NONE	NO
Inventive Step (IS)	Claims 38 and 48 - 81	YES
	Claims 1 - 37, 39 - 47, 82 and 83	NO
Industrial Applicability (IA)	Claims 1 - 83	YES
	Claims NONE	NO

2. CITATIONS AND EXPLANATIONS
Please See Continuation Sheet

Form PCT/IPEA/409 (Box V) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

V. 2. Citations and Explanations:
Claims 1 - 4, 6 - 14, 16 - 21, 23 - 37, 39 - 47, 82 and 83 lack an inventive step under PCT Article 33(3) as being obvious over Gagne (WO 99 49394) in view of Kennedy (US 5,688,174.

Claim 1: Gagne discloses a personal computer ("PC") operating system customizable for use in consumer devices and specialized industrial controllers. It teaches the following features of the claimed invention: (a) a computerized controller having a processor, memory and nonvolatile storage; (b) a system handler, executed by the operating system kernel, operable to dynamically link with at least on a program object; (c) an Application Program Interface (API) callable from the program object; and (d) an operating system kernel that executes the system handler application. See fig. 2, pp 13 - 18. Gagne does not disclose using the operating system in a gaming device. Kennedy discloses using a PC-type controller in gaming devices. See column 3, lines 1 - 12 and column 5 lines 36 - 58. In view of Kennedy, it would have been obvious to one of ordinary skill in this art at the time this invention was made to modify the operating system taught by Gagne in a gaming device. As taught by Gagne, the modification would enhance the gaming device by providing a customized operating system that is customized to the gaming environment while reducing cost by avoiding the need to duplicate commonly needed code.

Claim 2: Gagne teaches a system handler comprising a plurality of device handlers. See figure 2, pp 13 - 18.

Claim 3: Gange teaches a system handler unloading, loading and executing program objects.

Claim 4: Gagne teaches storing application data modified by program objects in nonvolatile storage. See pages 13 - 14.

Claim 6: Kennedy teaches an IBM PC-compatible controller. See column 3, lines 1 - 12 and column 5, lines 36 - 58.

Claim 7: Gagne and Kennedy do not describe LINUX. However, Gagne teaches an operating system kernel substantially equivalent to LINUX. LINUX is a well-known operating system which is notoriously free, modifiable and reliable. Thus, it would have been obvious to one of ordinary skill in this art at the time this invention was made to modify the gaming apparatus suggested by the combination of Gagne and Kennedy to substitute LINUX to reduce the device's cost and increase it's reliability.

Claim 8: Gagne discloses a modified operating system kernel. See page 13.

Claim 9: Gagne discloses accessing user-level code form ROM. executing from ROM and disabling selected device handlers. See pages 7, 8 , 16 and 17.

Claim 10: Gagne discloses modular modifications. See page 17.

Form PCT/IPEA/409 (Continuation Sheet) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Claim 11: Gagne teaches a system handler comprising a plurality of APIs with a library of functions callable from program objects. See figure 2 and pages 10 - 18.

Claim 12: Gagne teaches a system handler managing an event queue determining the order of the device handlers. See figure 2, pages 15 - 16.

Claim 13: Gagne teaches loading a shared object; executing program object, unloading the first program object; loading a second program object; storing data variables in storage such that a second program object in the library later loaded can access the data variables in storage. See figures 1 - 3 and pages 6 - 18.

Claim 14: Gagne discloses unloading a first program object and loading a second program object. See pages 16 - 18.

Claim 16: Gagne teaches a kernel customized for a particular use. See page 17. The combination of Gagne with Kennedy suggests a kernel customized for gaming use.

Claim 17: Gagne discloses accessing user-level code from ROM, executing from ROM and disabling selected device handlers. See pages 7, 8, 16 and 17.

Claim 18: Gagne teaches a computerized system controlled by a general-purpose computer comprising non-volatile storage that stores application data such that loss of power does not result in a loss in the state of the game. See pages 7 and 14. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 19: Gagne teaches an operating system comprising a processor and memory and is operable to control a computerized application wherein the memory contains a plurality of shared objects and a system handler adapted to execute at least one shared object from memory. See figures 1 - 3 and pages 10 - 18. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 20: Gagne teaches a computerized system controlled by a general purpose computer comprising non-volatile storage that stores application data such that loss of power does result in a loss in the state of the application. See pages 7 and 14. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 21: Gagne teaches loading a shared object; executing program object, unloading the first program object; loading a second program object; storing data variables in storage such that a second program object in the library later loaded can access the data variables in storage. See figures 1 - 3 and pages 6 - 18. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 23: Gagne discloses managing events through a system handler application. See figures 1 - 3 and pages 16 - 18.

Claims 24 and 25: Gagne discloses managing events through a system handler application to cause a computer to manage at least one program object via a system handler application such that a single object is executed at any one time wherein the objects are operable to share data in non-volatile storage. See figures 1 - 3 and pages 16 - 18. In regard to the number of objects executed, Gagne teaches that this is a matter of design choice depending on the needs of the system. See pages 13 and 14. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 26: Gagne discloses instructions executed to cause a computer to provide functions through an API that comprises part of the system handler application. See figures 1 - 3 and pages 13 - 18.

Claim 27: Gagne teaches a computerized system controlled by a general-purpose computer comprising non-volatile storage that stores application data such that loss of power does not result in a loss in the state of the application: See pages 7 and 14. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 28: Gagne teaches an operating system comprising a processor and memory and is operable to control a computerized application wherein the memory contains a plurality of shared objects. See figures 1 - 3 and pages 10 - 18. Each program object is a different sequence of operations constituting a personality. The combination of Gagne with Kennedy suggests using the system for gaming. See the statements above regarding Claim 1.

Claim 29: Gagne describes an IBM PC-bases operating system.

Claim 30: Gagne describes a system handler. See figures 1 - 3 and pages 10 -18.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Claim 31: Gagne describes a system handler comprising a plurality of device handlers. Gagne teaches an operating system comprising a processor and memory and is operable to control a computerized application wherein the memory contains a plurality of shared objects and a system handler adapted to execute at least one shared object from memory. See figures 1 - 3 and pages 13 - 18.

Claim 32: Gagne teaches a system handler managing an event queue determining the order of the device handlers. Id.

Claim 33: Gagne teaches a system handler comprising PI callable functions. Id.

Claim 34: Gagne teaches a system handler managing an event queue determining the order of the device handlers. Id.

Claim 35: Gagne teaches an API having a library of functions. Id.

Claims 36 and 37: Gagne discloses a customizable operating system with an event queue, however, it does not describe the specifics of the queue management. Thus, Gagne describes all the features of the instant claims except the event queue queuing on first-come, first served basis (Claim 36) and the event queue queuing using more than one criteria (Claim 37). Regardless, event queues are a basic function of an operating system for managing the system's response to events. It is fundamental programming technique to arrange the event response protocol to respond to events in the most effective order. For example, in some cases, event queues are simply organized on a first-come, first-served basis. In other cases, some events are more critical than others. Thus, the event queues are simply organized on a priority basis. In still other cases, events are handled on both a priority and first-come, first served basis. It would be a matter or design choice as to which manner the event queue managed events. Thus, it would have been obvious to one of ordinary skill in this art at the time this invention was made to modify the gaming operating system suggested by the combination of Gagne and Kennedy to manage event queuing on a first-come, first-served basis or using more than one criteria to manage the event queue's priorities to respond to common events, such as button presses, on a first-come, first-served basis while responding to critical events, such as security faults, immediately based on a higher priority.

Claim 39: Gagne teaches a universal operating system comprising a system handler and an operating system kernel. See figures 1 - 3 and pages 3 - 5 and 13 - 18.

Claim 40: Gagne teaches a plurality of API's. See figures 1 - 3 and pages 13 - 18.

Claim 41: Gagne teaches an invent queue. See figures 1 - 3 and 14 - 18.

Claim 42: Gagne teaches a plurality of device handlers. Id.

Claim 43: Gagne teaches a kernel customized for a particular use. See page 17. The combination of Gagne with Kennedy suggests a kernel customized for gaming use. See the statements above regarding Claim 1.

Claim 44: Gagne discloses accessing user-level code from ROM, executing from ROM and disabling selected device handlers. See pages 7, 8, 16 and 17.

Claim 45: Gagne discloses controlling a networked online system. See page 9.

Claim 46: The Gagne and Kennedy combination does not describe controlling a progressive meter. Regardless, it is notoriously well-known in gaming devices to provide progressive games with meters displaying the value of the collective pool to attract players to the gaming device based on the added chance of winning the large progressive prize. Thus it would have been obvious to one of ordinary skill in this art at the time this invention was made to modify the gaming system suggested by the combination of Gagne and Kennedy to add the feature of controlling a progressive meter to enhance the attraction of the device and thereby generate greater revenues for the proprietor.

Claim 47: Gagne discloses accessing user-level code from ROM, executing from ROM and disabling selected device handlers. See pages 7, 8, 16 and 17.

Claim 82: Gagne discloses a controller configured to operate a system, a first non-volatile memory and a second non-volatile memory configured to communicate with the controller as a gaming RAID system for redundant storage of critical data. See pages 13 and 14. Kennedy suggests employing the system for gaming use. See the statements above for Claim 1.

Claim 83: Gagne teaches a first memory being non-volatile memory and the second being RAM. Id.

Claims 5, 15 and 22 lack an inventive step under PCT Article 33(3) as being obvious over Gagne and Kennedy as described

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US01/07447

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

immediately above and further in view of Pascal (US 5,791,851).

The combination of Gagne with Kennedy describes all the features of the claims except causing the execution of a corresponding callback function when a data variable is changed in memory. Pascal discloses an analogous operating system for a gaming device wherein callbacks are employed to communicate information between application modules upon the occurrence of certain events. See column 1, line 44 through column 2, line 30. Generally, callback routines are used in state-based machines to communicate data between independent modules upon the occurrence of predetermined events. See column 6, lines 25 - 45. Pascal describes using callback to enhance the robustness of a gaming device under fault conditions to protect data that may affect the outcome of a game payout. See column 2, lines 25 - 30. In view of Pascal, it would have been obvious to one of ordinary skill in this art at the time this invention was made to modify the customized gaming operating system suggested by the above combination of Gagne and Kennedy to execute a callback function corresponding to a change in game data stored in non-volatile memory to enhance the security of the gaming device by monitoring changes in data that might affect the outcome of the game payout and thereby provide a more secure gaming device that is resistant to errors caused by losses in power or tampering.

Claim 38 meets the criteria set out in PCT Article 33(2) and 33(3) because the prior art does not teach or fairly suggest a method for a universal gaming system in which the operating system verifies that the kernel or code for a shared object has not changed.

Claims 48 - 70 meet the criteria set out in PCT Article 33(2) and 33(3) because the prior art does not teach or fairly suggest a method for universal gaming in which a game operating system, including hardware and software, is removed from a game, installing a universal operating system in place of the game operating system, with the universal gaming operating system including a game program layer, an open operating system and a game controller for running the game program layer on the open operating system.

Claims 71 - 81 meet the criteria set out in PCT Article 33(2) and 33(3) because the prior art does not teach or fairly suggest a method for configuring a game program layer for a universal system configured for a game program and an open operating system wherein the game program layer is configured on a computer remote from the gaming system and downloading the game program layer into the universal gaming system.

Claims 1 - 83 meet the criteria set out in PCT Article 33(4) and thus have industrial applicability because the subject matter claimed can be made or used in industry.

---------- NEW CITATIONS ----------

WO 99/49394 A1 (GAGNE) 30 September 1999 (30.09.1999) See the entire document.
US 5,688,174 A (KENNEDY) 18 November 1997 (18.11.1997) See the entire document.
US 5,971,851 A (PASCAL et a) 26 October 1999 (26.10.1999) See column 1, line 44 thru column 2, line 30 and column 6, linee 26 thru 45.

Form PCT/IPEA/409 (Continuation Sheet) (July 1998)